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## Police Science Technical Abstracts and Notes

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## POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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**Blood Grouping Tests in Disputed Paternity Proceedings and Filial Relationship**—Leon N. Sussman, *Journal of Forensic Sciences*, 1 (3): (July, 1956). Three hundred cases of disputed paternity proceedings are presented, in which blood testing excluded 43 or 14% of the defendants. The total number of men probably falsely accused in this series of 300 cases is shown to be approximately 111 or 37%. The value of blood testing in personal identification, disputed paternity actions, and other claims of filial relationship is demonstrated. Blood testing is an important and valuable medico-legal procedure and should not be neglected in any pertinent situation. (WEK)

**Education and Qualifications of Examiners of Questioned Documents**—Ordway Hilton, *Journal of Forensic Sciences*, 1 (3): (July, 1956). The author outlines the professional qualifications of an examiner of questioned documents; how one becomes a document examiner; the necessary background, training, and experience. The varied background or pre-professional training of men in the field of document examination is discussed. It includes early training in penmanship instruction, education in the field of the natural sciences, photography, and law. Essentials of the professional training of a document examiner outlining its scope and its various phases are reviewed. Consideration is given to the three

possible methods of instruction: apprenticeship, university training, and self-education. Finally, the factors which make up the professional qualifications of a document examiner in the eyes of a court are cited, and the crying need for a standardized program of training and a universal testing procedure is pointed out. (WEK)

**Distance Determinations in Cases of Gunshot through Glass**—Glen H. McLaughlin and Charles H. Beardsley, Jr., *Journal of Forensic Sciences*, 1 (3): (July, 1956). The results of the limited study conducted by the authors indicates that satisfactory distance determinations can be made in instances where firearms have been discharged through glass within the usual range of the deposit of nitrite particles by the firearm in question. More accurate determinations are possible in cases involving clean window glass than in dusty or weather-stained glass. Patterns are best prepared by transfer to adhesive tape prior to processing as contrasted to direct transfer to desensitized and treated photographic paper. (WEK)

**Methods of Investigation in the Identification of Human Remains**—Harold L. Beddoe, *Journal of Forensic Sciences*, 1 (3): (July, 1956). The author illustrates some of the problems in identification of human remains which confront the forensic pathologist which may be solved by the application of medical and non-medical methods of investigation. These problems require first the realization that a great deal can be learned from the most unpromising of remains on first appearance;

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second, that no scrap of evidence should be overlooked; and third, that the non-medical methods are as important as the medical methods of investigation. The forensic pathologist should be proficient in the allied medical specialties to aid in his investigation, and he should have knowledge of the sources of information he must seek to make the final positive identification. (WEK)

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**Examination of Blood Stains in Forensic Medicine**—Alexander S. Wiener and Eve B. Gordon, *Journal of Forensic Sciences*, 1 (3): (July, 1956). In the serological laboratory of the Office of the Chief Medical Examiner of New York City, hundreds of blood stained articles are examined annually in homicide cases. This paper deals primarily with certain principles and practical aspects of the tests and the interpretation of the findings, which cannot be found in text books on the subject. The blood grouping tests are most valuable if the blood stains are still fresh and wet when found, because such stains can be classified competely for all the known blood factors. Such opportunities are rare; however, a few illustrative cases are described. Generally, the blood stains are already dried when found, and frequently, they are in poor condition because the articles on which they occur are badly soiled and contaminated with bacteria. When examining such dried stains, the grouping tests are necessarily limited to the four A-B-O groups, and even so, positive results are obtained in only a minority of cases.

Some general principles regarding the chemical and precipitin tests for human blood are discussed, and a few cases have been described which illustrate the value of these tests. The tests have been particularly valuable in hit-run automobile homicides. With regard to the technique of grouping dried blood stains, methods are described which have given satisfactory results, for testing for isoagglutinins in blood crusts and in blood stains on cloth. Also included are instructions for police officers for handling blood stained articles so that they may reach the laboratory in optimal condition for examination.

The limitations and pitfalls of blood grouping

tests on dried stains are discussed. It is pointed out that the neophyte has a tendency to interpret the reactions too literally and is too ready to report positive results. Two cases are described which illustrate serious blunders committed by such beginners, and it is pointed out that such errors can be avoided by using proper controls and the blind test. (WEK)

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**Spectrographic Identification of Noxious Elements (Thorium and Silicon) in Biopsy Tissues**—Frederick C. Bauer, Jr., Norbert W. Tietz, and Edwin F. Hirsch, *Journal of Forensic Sciences*, 1 (3): (July, 1956). The usefulness of an emission spectrograph in disclosing noxious metals or elements in surgical tissues is emphasized in this report. Spectrographic analysis of surgical necropsy tissues frequently can reveal significant amounts of unsuspected noxious metals. Thorium was identified in pigmented scar tissues of the neck, and silicon was identified in a peritoneal talc granuloma and a lung with pneumoconiosis. (WEK)

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**Determination of the Time of Death by Body Heat Loss**—Herbert P. Lyle and Frank P. Cleveland, *Journal of Forensic Sciences*, 1 (4): (October, 1956). On the basis of the observations contained in this report, the following impressions resulted:

- (1) The rate of heat loss from the body by radiation varies considerably according to the sites selected for recording.
- (2) The rate of heat loss from the body is dependent to a great extent upon the difference in temperature between the environment and the body.
- (3) The variabilities of body structure, physiological activity, putrefaction, and external insulation are important factors affecting the rate of heat loss. These factors have less effect upon heat loss from the brain than from the other sites studied.
- (4) The time of death cannot be determined by measurement of heat loss within satisfactory limits when death has occurred more than 24 hours before the observations are begun or when there is only a few degrees

difference between the environmental and body temperatures.

Preliminary statistical examination of the results obtained on the 56 cases has resulted in certain suggestions for the further conduct of the investigation. No attempt will be made to draw conclusions until a greater number of cases has been examined and subjected to statistical analysis. (WEK)

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**Differential Thermal Analysis: Its Application to the Study of Mineral Evidence in Scientific Crime Detection**—Roy H. Jevons, *Journal of Forensic Sciences*, 1 (4): (October, 1956). Differential thermal analysis offers a convenient method for the identification of safe insulation and for distinguishing between insulations from different makes of safes. However, considerable additional research remains to be done before the full value of differential thermal analysis is realized in the field of scientific crime detection. (WEK)

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**Tetraodon (Blowfish) Poisoning**—Jerome Benson, *Journal of Sciences*, 1 (4): (October, 1956). Two cases of fatal *Tetraodon* (blowfish) poisoning in southern Florida are reported. Death occurred in less than one hour in one case and in about six hours in the second case. Present information concerning the chemical and pharmacological nature of the toxin is incomplete, despite extensive investigation, especially by Japanese authorities. There is no known antidote for the toxin. The liver, intestine, roe, and gonads are known to be violently toxic to humans. The flesh is variably toxic, depending on the species and the method of cleaning the fish. A 60% mortality rate has been reported in these cases, even with the best of medical care. (WEK)

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**Questioned Documents and Other Problems in Postal Law Violations**—James P. Kelley, *Journal of Forensic Sciences*, 1 (4): (October, 1956). Certain problems in the field of questioned document examination, as related to violations of the postal laws of the United States, are presented. The development of

policy with regard to the paramount principle of the sanctity of the mails is briefly traced.

The scale of postal operations, and the framework and function of the Postal Inspection Service are outlined. The organization, methods, technical work, and research conducted by the five Postal Inspection Service forensic laboratories are considered in some detail. A discussion of the various types of questioned document cases encountered in the Inspection Service laboratories has been presented.

The Post Office Department and its investigative agency, the Postal Inspection Service, supported by the full power of the Government, engage in such activities as will sustain the confidence of the people of the United States in the safest and most efficient postal service that can be provided. (WEK)

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**Reporting and Classification of Cause of Death in Medicolegal Cases**—Iwao M. Moriyama, *Journal of Forensic Sciences*, 1 (4): (October, 1956). The cooperation of the medical examiner or coroner is most important to the health authority for the following reasons: Many deaths from natural causes coming under the scrutiny of the medical examiner and the coroner involve chronic diseases, a major problem area of public health. The number of deaths certified by the medicolegal authority is numerically large and represents a relatively high proportion of all deaths. These deaths generally present difficulties in ascertaining the cause of death. A large segment of deaths coming to the attention of medicolegal investigators is preventable and may influence the direction of health programs. The vital statistics offices are in a position to call to the attention of the medicolegal authority the registered deaths that require certification by the medical examiner or coroner. In turn, the medical examiner or coroner can be most helpful to the vital statistics offices by supplying complete medicolegal information as promptly as possible. (WEK)

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**Application of Blood Grouping to Derivative Citizenship**—Leon N. Sussman, *Journal of*

*Forensic Sciences*, 1 (4): (October, 1956). The medicolegal application of blood grouping tests has been extended to include another area in which filial relationship is a factor. The use of this scientific and impersonal tool by the State Department and the Immigration and Naturalization Service has aided these agencies in the performance of their assigned duties. The value of blood testing has again proven itself by demonstrating the falsity of paternity claims in approximately 80% of the applications made for derivative citizenship, thus exposing a vast brokerage ring, trafficking in human beings. (WEK)

**Incidence of Barbiturate Intoxication Observed at the Cuyahoga County Coroner's Office**—Irving Sunshine, *Journal of Forensic Sciences*, 1 (4): (October, 1956). Barbituric acid derivatives are not as significant a contributory factor in sudden and unexpected death as many reports would have one believe. They do contribute to this problem but only in a relatively minor aspect.

In setting up a comprehensive screening program for investigating unsuspected barbiturate intoxication, one should include those cases of natural death where death was unwitnessed, all suicides, and all deaths due to accidents other than vehicular. Colored people could reasonably be excluded from the survey. These data pertain to Cuyahoga County. Extrapolation to other areas may not be valid. (WEK)

**Chromatography of Organic Bases on Multi-buffered Paper**—Morton Schmall, Ernest G. Wollish, and E. G. E. Shafer, *Analytical Chemistry*, 28 (9): 1373 (September, 1956). The authors describe a method of separating compounds, with minor differences in  $R_f$  values, utilizing a filter paper strip impregnated in individually marked zones, with various buffers in sequence of decreasing pH. A single solvent is used in the presence of water vapor. Examples are given of separation of several of the opium alkaloids. A semiquantitative esti-

mation of reflectance measurement is also described. (JFW)

**Paper Disk Electrophoresis**—N. C. Ganguli, *Analytical Chemistry*, 28 (9): 1499 (September, 1956). This paper describes a new, simple, and convenient apparatus for paper electrophoresis on circular filter paper. Successful separation of proteins present in blood serum is claimed. Advantages of this apparatus are simplicity and rapidity of performance, the large (twelve in examples quoted) number of samples that can be analyzed, and the uniformity of conditions that can be attained during analysis of different samples. (JFW)

**Detection and Identification of Clinically Important Barbiturates**—Leo Levi and Charles E. Hubley, *Analytical Chemistry*, 28 (10): 1591 (October, 1956). The formation of dark purple-colored derivatives of various barbiturates with an aqueous copper sulfate-pyridine solution is discussed. Physicochemical characteristics and infrared absorption spectra of twelve barbiturates and derivatives are presented. The authors suggest that the method can be useful in microchemical as well as infrared absorption methods for identification of the various barbiturates. (JFW)

**Firearms Identification Problems**—W. E. Kirwan and A. B. Hart, *Bulletin of the Bureau of Criminal Investigation*, New York State Police, 21 (4): 1-10 (1956). A review of firearms identification problems with emphasis on determinative features such as make of ammunition, bullet composition, constant use of firearm, change of barrel length, and use of photographs. In the latter subject, the authors point out the difficulty of properly portraying the identification of a mutilated bullet. The need for complete and accurate firearms description and data is discussed. A plea is made for standardization of data gathering methods coupled with better avenues of dissemination. (JDN)